International Journal of

CONTROL

Editor: A. G. J. MacFARLANE

Consultant Editor: A. T. FULLER

Editorial Board:

Sweden - - - -	Professor K. J. ÅSTRÖM
Netherlands - - -	Professor P. EYKHOFF
U.S.A. - - - - -	Professor YU-CHI HO
U.S.A. - - - -	Professor R. E. KING
U.S.A. - - - -	Professor C. T. LEONDES
U.K. - - - - - -	Professor D. Q. MAYNE
Switzerland - - -	Professor PAUL PROFOS
U.K. - - - - - -	Professor H. H. ROSENBROCK, F.R.S.
West Germany - -	Professor Dr.-Ing. M. THOMA
U.K. - - - - - -	Professor J. C. WEST
U.K. - - - - - -	Professor J. H. WESTCOTT

Volume XXIII

January 1976 to June 1976

Published by

TAYLOR & FRANCIS LTD 10–14 Macklin Street London WC2B 5NF

Copyright 1976 © TAYLOR & FRANCIS LTD. ISSN 0020–7179.

CONTENTS OF VOL. XXIII (Nos. 1-6)

NUMBER 1—JANUARY

Page

Schwarz matrix properties for continuous and discrete time systems. B. D. O. ANDERSON, E. I. JURY and M. MANSOUR 1

New results for linear-quadratic discrete-time games. N. D. DIEM and B. D. O. ANDERSON 17

Generalized root locus assignment of all the poles of a multivariable system by output feedback. A. I. VARDULAKIS 39

Design of stabilizing feedback controllers for a class of multivariable linear systems with slow and fast modes. B. PORTER 49

Design of linear multivariable continuous-time tracking systems for plants with inaccessible states. B. PORTER and A. BRADSHAW 55

Modal decoupling and dyadic transfer function matrices. D. H. OWENS 63

Error analysis of low-order filters and unduality between error equations of low-order filter and singular control problem. M. NAGATA and Y. SAWARAGI 67

Optimal linear feedback control of a class of distributed-parameter systems. C.-T. LO 81

Method of moments and controllability of certain distributed-parameter systems. S. S. PRABHU and I. MCCAUSLAND 89

The problem of exact model matching by the use of external description. C. G. MONTES 97

Stabilization and pole placement using output feedback. H. SERAJI ... 105

The use of zeros and zero-directions in model reduction. U. SHAKED and N. KARCANIAS 113

An algorithm for calculating a class of discrete stochastic Liapunov functions. P. DIAMOND 137

Correspondence:

Comments on 'Liapunov function for power systems'. V. E. HENNER 143

On the convergence of identification procedures. K. R. GODFREY ... 145

Comments on 'A general Liapunov function for multimachine power systems with transfer conductances'. J. L. WILLEMS 147

NUMBER 2—FEBRUARY

Page

Geometric approach to analysis and synthesis of system zeros. Part 1. Square systems. B. KOUVARITAKIS and A. G. J. MACFARLANE 149

Geometric approach to analysis and synthesis of system zeros. Part 2. Non-square systems. B. KOUVARITAKIS and A. G. J. MACFARLANE 167

A method for computing invariant zeros and transmission zeros of invertible systems. V. SINSWAT, R. V. PATEL and F. FALLSIDE 183

Stability and performance of a class of decentralized filters. C. W. SANDERS, E. C. TACKER and T. D. LINTON 197

Minimum-fuel control of linear discrete systems. L. V. KOLEV 207

Optimal (singular) control of a floatation cell in mineral processing. A. J. KOIVO and H. N. KOIVO 217

A stochastic approximation algorithm for asymptotic time-invariant linear systems. H. HÖGE 229

A separation theorem for the stochastic sampled-data LQG problem. N. HALYO and A. K. CAGLAYAN 237

The servomechanism problem and the method of the state-space in the frequency domain. P. G. FERREIRA 245

On the design of discrete-time optimal dynamical controllers using a minimal-order observer. J. O'REILLY and M. M. NEWMANN 257

Random-input describing functions for multi-input non-linearities. J. H. TAYLOR 277

Approximate models from energy conversion plant data. C. MCCORKELL and B. H. SWANICK 283

Correspondence:

Corrections to 'On zeros of multivariable systems'. R. V. PATEL ... 295

NUMBER 3—MARCH

Asymptotic behaviour of root-loci of linear multivariable systems. B. KOUVARITAKIS and U. SHAKED 297

A general frequency stability criterion for multi-input–output, lumped and distributed-parameter feedback systems. C. F. CHEN and Y. T. TSAY 341

A control averaging technique for solving a class of singular optimal control problems. V. KUMAR 361

Admissible sets in linear feedback systems with bounded controls. A. FEUER and M. HEYMANN 381

An experimental study of a model reference system identification method. C.-C. HANG 393

Page

A method for frequency domain simplification of transfer functions. A. S. S. R. REDDY 403

External description of multivariable systems. J. ARACIL and C. G. MONTES 409

Solving $AX+XB=C$ by control and tearing. D. L. POWERS 421

On a matrix Riccati equation of cooperative control. M. ANDJELIĆ ... 427

On the commutative class of linear time-varying systems. M.-Y. WU and A. SHERIF 433

NUMBER 4—APRIL

The angles of departure and approach of the root-loci in linear multivariable systems. U. SHAKED 445

On optimal choice of sampling strategies for linear system identification. T. S. NG and G. C. GOODWIN 459

Approximate analysis of non-linear stochastic systems. SH. A. ASSAF and L. D. ZIRKLE 477

Pole assignment with minimum eigenvalue sensitivity to plant parameter variations. V. GOURISHANKAR and K. RAMAR 493

On the computation of the characteristic polynomial and transfer-function matrix of multivariable systems. P. N. PARASKEVOPOULOS 505

Construction of a low parameter and disturbance sensitivity system by a model-following method. Y. KAMIYA 515

An application of the information theory to the fixed-point smoothing problems. Y. TOMITA, S. OMATU and T. SOEDA 525

A new approach for the design of non-interactive systems. N. VISWANADHAM and D. P. ATHERTON 535

De-stabilization of predator-prey systems under enrichment. F. BRAUER 541

Stabilization and de-stabilization of predator-prey systems under harvesting and nutrient enrichment. F. BRAUER, A. C. SOUDACK and H. S. JAROSCH 553

Minimal realization of linear systems. A. C. TSOI 575

Correspondence:

Comment on the paper "Multi person decision analysis in large-scale hierarchical systems—team decision theory". Y. C. Ho and K. C. CHU 587

Comments on the paper "Optimum energy conservation in a batch penicillin process". N. W. F. KOSSEN 589

Book reviews 591

NUMBER 5—MAY

Page

Some observations on instrumental variable methods of time-series analysis. P. YOUNG 593

New estimation algorithms for discrete non-linear systems and observations with multiple time delays. D. F. LIANG and G. S. CHRISTENSEN 613

Outline of an approach for the analysis of fuzzy systems. R. JAIN ... 627

A note on the bias in the Kalman–Bucy filter. T. SUBBA RAO 641

The estimation of autoregressive, moving average and mixed autoregressive moving average systems with time-dependent parameters of non-stationary time series. M. Y. HUSSAIN and T. SUBBA RAO 647

Improvement of turbo-alternator response using the inverse Nyquist array method. S. I. ASHON and H. NICHOLSON 657

Control of unstable mechanical system. Control of pendulum. S. MORI, H. NISHIHARA and K. FURUTA 673

Feed-forward–feedback control of multivariable systems. The overall design of a boiler control system. S. A. MARSHALL and D. H. OWENS 693

On the analysis of two-variable relay control systems with a linear-asymmetric plant. H. P. JÖRGL 703

Linear systems identification by Mellin deconvolution. R. PROST and R. GOUTTE 713

Exact and approximate expressions of the time response of tandem regulators. S. NICOSIA 721

Network synchronization with variable discrete control corrections. K. R. KRISHNAN and J. KOPLOWITZ 729

NUMBER 6—JUNE

A near-time-optimal control approach for third- and fourth-order relay control systems. E. P. RYAN 741

Time-optimal control of certain plants with positive real eigenvalues. E. P. RYAN 775

Dyadic output feedback laws generated as Kronecker products: optimal and suboptimal solutions. H. M. POWER 785

A discrete model reference adaptive system design. O. A. SEBAKHY ... 799

Variational embedding method and application to distributed systems control. V. P. BHATKAR and B. RAO 805

Homographic transformation for the simplification of continuous-time transfer functions by Padé approximation. S. C. CHUANG 821

Integrity of multivariable first-order-type systems. D. H. OWENS 827

Page

Cascade canonical form for linear multivariable systems. D. H. OWENS 837

The Luenberger canonical form in the state/parameter estimation of linear systems. G. W. IRWIN and A. P. ROBERTS 851

Some canonical forms for linear multivariable systems. N. K. SINHA and P. RÓZSA 865

A counter-example to a criterion on the finite response of feedback systems. E. K. HADDAD 885

Correspondence:

Addendum to the paper 'On the pole assignment in linear systems with fixed order compensators'. R. AHMARI and A. G. VACROUX 887

Subject index 889

Author index 893